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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Frank Neumann

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EXAMINER

NDUBIZU, CHUKA CLEMENT

ART UNIT

PAPER NUMBER

3743

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/530,384	<b>Applicant(s)</b> NEUMANN ET AL.	
	<b>Examiner</b> CHUKA C. NDUBIZU	<b>Art Unit</b> 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14, 16-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Amendment*

Applicant's amendments filed on August 27 2008 is acknowledged.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 1-3, 4 9, 10, 14 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin 5,167,218 in view of Ahearn et al 4,336,793. Deakin teaches the invention as claimed (see figs. 2-11) a solar collector comprising, a sheet metal panel (20, 27+26 (fig 6)) having two sides and adapted to be irradiated by sun light on one side (column 2 lines 44-47), a register-shaped arrangement (Fig 4) of capillary tubes (16, 57 in fig 11) separated from one another at a distance for the flow of a fluid medium (column 7 line 30-33), that lies on the side opposite the side of the sheet metal

Art Unit: 3743

panel (17, 20) to be irradiated (column 2 line 44,45), a thermally insulating insulation core (11) that is also positioned on the opposite side of the sheet metal (fig 5); wherein the capillary tubes of the register-shaped arrangement are placed in contact with the surface (18 is in contact with insulation in the embodiment of fig 4) of the thermally insulating insulation core, the insulating insulation core is bonded to the sheet metal panel (column 5 line 49-52) by means of a non-metallic elastic adhesive layer (21, 23) (epoxy is elastic and non-metallic (column 4 line 12-14)); the capillary tubes are at least partially embedded into the adhesive layer 21 between the sheet metal panel 20 and the insulation core 11 (see fig 5); (claim 2) wherein each of the capillary tubes of the register-shaped arrangement is placed into a slot (25 in fig 5) in the insulation core (11), whereby the capillary tubes extend above the insulation core by some amount; (claim 3) wherein the surface of the insulation core is flat, and that the capillary tubes are laid directly onto the flat surface (column 7 line 29, see fig 3); (claim 4) wherein the insulation core comprises foam (column 4 line 67); (claim 9) wherein the slots (18, 25) possess a partially-round, cross-section (figs 4 and 5); (claim 10) wherein the capillary tubes consist of metal (aluminum and copper (column 3 line 56, 57)); (claim 16) wherein the side of the insulation core facing away from the sheet metal panel is supported by a plate-shaped stiffening element 4; (claims 17 and 18) wherein the insulation core is partially surrounded by a cassette 4 which includes two opposing margins angled inwards (on the side of 4 see fig 4) so that a seal 13 is positioned between the angled margin. One of ordinary skill in the art recognizes that a seal is usually an elastic body.

However, Deakin does not teach the sheet metal panel being formed with two opposing, angled arc-shaped edge profiles to interlock with another sheet metal panel on a roof.

Ahearn et al teach a solar panel 2 wherein the sheet metal panel is formed (claim 14) with two opposing, angled arc-shaped edge profiles 6 and 8 (see fig 1) to interlock with another sheet metal panel on a roof (column 2 lines 50-58).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin's solar collector by including angled edges on opposite ends that would interlock with one another in order to effectively join the panels together to provide a larger size panel.

With regard to claim 1, the recitation "for use as a roof shingle" is deemed a statement of intended use. *In re Otto*, 312 F.2d 937, 938 136 UPSQ 458, 459 (CCPA 1963). MPEP 2111.02 II.

With regard to claim 1, Deakin's plate would be self supporting since the process of making the panels recites that the thickness of the plate can be built up to any desired thickness (column 3 lines 60-65).

With regard to the recitation in claim 2 "capillary tube extends by an amount, which essentially corresponds to the thickness dimension of a fluid adhesive layer before hardening", this limitation is regarded as a design choice since the applicant does not disclose any criticality for limiting the amount the tube should extend. In Deakin's invention the tubes extend enough such that the adhesive can hold the plate and the collector is functional.

With regard to claim 18 the margins angled outwards instead of inwards as taught by Deakin is a matter of rearrangement of part which would not affect the functioning of the device. *In re Japikse*, 181. F.2d 1019, 86 USPQ 70 (CCPA 1950), MPEP 2144.04 VI C.

Claims 7, 8, 11, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin in view of Ahearn and further in view of Bloor et al 4,606,327. Deakin in view of Ahearn teaches the invention as claimed and as discussed above. Deakin also teaches a solar collector (claim 7) wherein the adhesive layer comprises, sodium silicate and aluminum oxide (column 4 line 51,52) and these will have a higher thermal-conductivity coefficient than the material of the insulation foam (column 4 line 67); (claim 11) Deakin discloses numerous recesses 25 on the insulation core .

However, Deakin in view of Ahearn does not teach a solar collector wherein the surface of the insulation includes numerous recesses to receive the adhesive; wherein the recesses extend essentially to the slot depth or extend slightly past it.

Bloor discloses a solar collector (fig 1) wherein the surface of the tiles (11) (insulation) includes numerous recesses 14; (claim 12) wherein the recesses extend slightly past the depth of the slot 15.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin in view of Ahearn's solar collector by including all the limitations taught by Bloor and recited above in order to provide a solar collector that

would be quickly mounted on roof tops with little damage to the roof as taught by Bloor (column 1 line 28-30).

With regard to claim 8, Deakin discloses the use of polyester resin and not specifically methacrylate. Methacrylate is a polyester resin and the selection of methacrylate is an obvious engineering choice. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960. MPEP 2144.07).

With regard to claim 13, forming the recesses by pressure of a bristle roller is an obvious design choice of how to make the recesses. The Applicant does not disclose any significance of using bristle rollers.

Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin in view of Ahearn and further in view of Graham 4,517,721. Deakin in view of Ahearn teaches the invention as claimed and as discussed above. Deakin also teaches the two margins with a seal 13, which one of ordinary skill in the art would recognize as being usually an elastic body. However, Deakin does not teach the seal is a foam strip or adhesive band.

Graham discloses a solar heat exchanger (fig 1-7), comprising a one-piece sheet metal plate 10 with two opposing angled edge profiles (see fig 7); wherein an elastic body 13 is positioned between the angled margins; wherein the elastic body 13 is a foam strip (rubber).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin in view of Ahearn's solar collector by including a foam strip

as the seal in order to provide a solar heat exchanger that is provided with a cheap and effective seal.

Claims 5, 6 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin in view of Ahearn and further in view of Hyman 4,191,169. Deakin in view of Ahearn teaches the invention as claimed and as discussed above. Deakin also discloses a sheet metal plate made of aluminum (column 3 lines 54, 55). However, Deakin in view of Ahearn does not teach a solar collector wherein the sheet metal panel consists of a titanium-zinc alloy; wherein the insulation core comprises fibrous material; wherein the insulation comprises foamed polystyrene or polyurethane; wherein the collector possesses an overall thickness, including insulation core, of between 10 mm and 50 mm or 25 mm to 35 mm; wherein the collector module is installed in a stair step roof, whose surface consists of sheet metal panels connected to one another.

Hyman discloses a solar collector (fig 3), (claim 6) wherein part of the insulation core comprises fibrous material (column 4 line 13-16) and (claim 5) part of the core 40 comprises polystyrene; wherein the insulator thickness is of the order of 3 inches (75 mm) (column 4 line 18).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin in view of Ahearn's solar collector by including the limitations taught by Hyman and recited above in order to provide a solar collector unit that is rigid and lightweight as taught by Hyman (column 4 lines 39-41).



With regard to claims 21 and 23 the overall thickness of the module being in the range of 10-50 mm or 25-35 mm, this is deemed an optimization within prior art conditions. Hyman discloses insulation thickness of about 75 mm (by way of example) and since the metal absorber is very thin (order of 0.1 mm (Deakin, column 3 line 56)) the overall thickness of the collector is of the order of 75 mm. 50 mm is of the order of 75 mm. Therefore, the limitation that the thickness be between 10 and 50 mm or between 25 mm and 35 mm is within the general range of 75 mm. "where the general condition of a claim is disclosed in prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) MPEP 2144.05 II A.

With regard to claim 20, the sheet metal being made of titanium-zinc alloy, this is deemed an engineering design choice since the applicant does not disclose the need for using titanium-zinc alloy, which other materials cannot meet. Deakin discloses the use of a sheet metal plate made of aluminum (column 3 lines 54, 55).

With regard to claim 22 the collector module being installed in a stair step roof, whose surface consists of sheet metal panels connected to one another, this is a statement of intended use, which has not introduced any additional limitations on the structure of the collector. *In re Otto*, 312 F.2d 937, 938 136 UPSQ 458, 459 (CCPA 1963). MPEP 2111.02 II.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin in view of Ahearn and further in view of Kataoka et al 5,389,159. Deakin in view of

Ahearn teaches the invention as claimed and as discussed above except for an adhesive layer that is made of a reaction adhesive.

Kataoka discloses in a solar cell module, an insulation layer 103 that is attached to a plate using a reaction-settable adhesive (column 7 lines 10-13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin in view of Ahearn's solar collector by including a reaction-settable adhesive in order to provide a solar module that would allow the maker time to correct any mistakes before the adhesive sets fully.

### ***Response to Arguments***

Examiner notes the Applicant's comments with regard to his interview with the Examiner and his Supervisor. Although, Applicant's amendments may have distinguished over the earlier prior art of record, subsequent search revealed the new references used in the current rejection.

After due consideration it is determined that Applicant's claims do not distinguish Applicant's invention over the prior art of record.

### ***Conclusion***

The prior art made of record in the attached USPTO 892 and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHUKA C. NDUBIZU whose telephone number is (571)272-6531. The examiner can normally be reached on Monday - Friday 8.30 - 4.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Rinehart can be reached on 571-272-4881. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000

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